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SOLVE FOR X

- 2006A 6. What non-zero real value for x satisfies $(7x)^{14} = (14x)^7$?
- (A) $\frac{1}{7}$ (B) $\frac{2}{7}$ (C) 1 (D) 7 (E) 14
- 2014A 7. Nonzero real numbers x , y , a , and b satisfy $x < a$ and $y < b$. How many of the following inequalities must be true?
- (I) $x + y < a + b$
(II) $x - y < a - b$
(III) $xy < ab$
(IV) $\frac{x}{y} < \frac{a}{b}$
- (A) 0 (B) 1 (C) 2 (D) 3 (E) 4
- 2007A 9. Real numbers a and b satisfy the equations $3^a = 81^{b+2}$ and $125^b = 5^{a-3}$. What is ab ?
- (A) -60 (B) -17 (C) 9 (D) 12 (E) 60

- 2003B 9. Find the value of x that satisfies the equation

$$25^{-2} = \frac{5^{48/x}}{5^{26/x} \cdot 25^{17/x}}.$$

- (A) 2 (B) 3 (C) 5 (D) 6 (E) 9

- 2008A 9. Suppose that

$$\frac{2x}{3} - \frac{x}{6}$$

is an integer. Which of the following statements must be true about x ?

- (A) It is negative. (B) It is even, but not necessarily a multiple of 3.
(C) It is a multiple of 3, but not necessarily even.
(D) It is a multiple of 6, but not necessarily a multiple of 12.
(E) It is a multiple of 12.

- 2001 10. If x , y , and z are positive with $xy = 24$, $xz = 48$, and $yz = 72$, then $x + y + z$ is
- (A) 18 (B) 19 (C) 20 (D) 22 (E) 24

- 2006A 10. For how many real values of x is $\sqrt{120 - \sqrt{x}}$ an integer?

- (A) 3 (B) 6 (C) 9 (D) 10 (E) 11

